Best Practices

Firefighter Cancer Prevention

WorkplaceNL

Newfoundland Labrador

Cancer Information

According to the International Association of Firefighters (IAFF), cancer is now the leading cause of death in IAFF firefighters and the rate of firefighters obtaining cancer is rising at an alarming rate. In a recent study by the National Institute of Health and Safety (NIOSH), it found that firefighters are 9 per cent more likely to develop cancer than the general population and 14 per cent higher to die from cancer. This one statistic is one of many that have been studied over the last 20 years to show the link between firefighting and cancer.

Various types of fire, release toxic and carcinogenic substances, including benzene, 1,3- butadiene, and formaldehyde. The focus has generally been on substances having short- term acute effects: carbon monoxide (CO), carbon dioxide, hydrogen cyanide, nitrogen oxides (NOx), sulfur dioxide (SO2) and hydrogen chloride.

With the increasing use of polymers in building construction and furnishings, there is concern that the burning of these new materials releases large quantities of other highly toxic substances.

Combustion and pyrolysis products from newer building materials and furnishings were believed to be more toxic than smoke from fires in buildings built before these materials became commonplace, and more toxic than smoke from wildland fires. However, many of the carcinogenic products of combustion identified are volatile organic compounds and are common to most burning materials. In a more recent study, no new or unusual non-polar volatile organic compounds (VOCs) were observed in current structural fires compared to the combustion of wood. Adding polyvinyl chloride (PVC) to the fire load at simulated apartment fires was observed to significantly increase levels of polychlorinated phenols (IARC Group 2B), while polycyclic aromatic hydrocarbon (PAH) levels remained essentially unchanged. The increases in levels of polychlorinated biphenyls (PCBs, 0.021 to 0.031 mg/m3), polychlorinated benzenes (0.002 to 0.010 mg/m3) as products of combustion were not significant [possibly due to the small sample size]. In another study, proportionately higher levels of ethyl benzene (IARC Group 2B) were found at an electronics factory fire when compared to levels at residential and mixed occupancy fires.

The emission of combustion products (in mg per kg of material burned) for the same material varies greatly depending on combustion conditions such as ventilation (oxygen supply), temperature, and heating rate. Nonetheless, the relative amounts of the various non- polar VOCs found in smoke at municipal structural fires have been found to be remarkably similar from fire to fire, namely with the same 14 of 144 target compounds, dominated by benzene (IARC Group 1), toluene and naphthalene (IARC Group 2B).

Firefighters are exposed to many known or suspected carcinogens (cancer-causing agents) during the course of a typical career. Unlike other occupations with controls to reduce exposure, the nature and unpredictability of fire makes it impossible to systematically control exposures to firefighters.

Keeping the above information in mind, fire departments are encouraged to maintain training records and incident reports for the purpose of tracking each exposure while the member is in the fire service. These documents will aid a firefighter should he or she be injured while performing their duty.

Each fire department is encouraged to use this Prevention Guide to help mitigate the risk to their members while they protect the members of our communities.

It is the recommendation of the Cancer Prevention Committee to follow the Guidelines and Best Practices outlined in the following:

NFPA 1851, Standard on Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

NFPA 1500, Standard on Fire Department Occupational Safety, Health and Wellness Program

NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

The garments manufacturer's instructions.

Mission Statement

The mission of the Cancer Prevention Committee is to promote and facilitate cancer prevention methods and best practices that relate to the fire service of the province.

Fight Against Cancer Pledge

In support of our fellow firefighters who have been diagnosed with and are in the midst of their fight against cancer, we would like to make every effort to support our extended families in any way possible. We can do our part to help fight cancer by taking effective preventative measures that can help reduce the risks of cancer. This pledge is simple, but meaningful.

I pledge to take these simple preventative steps to help the fight against cancer

- **I pledge** to wear and use my Self-Contained Breathing Apparatus from initial attack to completion of overhaul.
- **I pledge** to do a field decontamination of my Personal Protective Equipment to remove as much of the bulk contamination as possible while still at the fire scene.
- **I pledge** to use wet wipes to remove as much soot as possible from my head, neck, jaw, throat, under arms and hands immediately and while still at the fire scene.
- **I pledge** to wash contaminated clothes as soon as practical. I pledge to shower thoroughly after a fire and change into a clean work uniform.
- **I pledge** to clean all my PPE including gloves, hood, helmet, helmet liner, and turnout/bunker gear immediately after a fire.
- **I pledge** to not take contaminated clothes or PPE home or store it in my vehicle.
- **I pledge** to decontaminate the fire apparatus interior, including my SCBA and other tools used at the fire.
- **I pledge** to keep turnout/bunker gear out of the apparatus interior, living and sleeping quarters.
- **I pledge** to make every effort to use sunscreen or sun block on all exposed skin.
- **I pledge** to take responsibility for my health by participating in my annual medical examinations to help with early detection of cancer or other life changing diseases.

_____
Participant Name (print)

_____
Participant Signature

_____
Date

Wellness Fitness Program

Physical Exam

1. Vital Signs – Blood Pressure and pulse, temperature, respirations, height and weight

2. Head, ears, nose and throat exam

3. Examination of the neck

4. Cardiovascular, pulmonary, gastrointestinal and genitourinary (may include pap smear for females or digital rectal exam for men) rectal, lymph node and neurological exams.

5. Musculoskeletal and skin are also assessed.

Investigations

1. Routine Bloodwork: CBC, SGOT, SGPT, LDH, Alk. Phos, Bilirubin, Lipid Profile, glucose, BUN, Creatine, Sodium, Potassium, CO2, Total Protein, Albumin, Calcium, PSA, Lead level.

2. Urinalysis dipstick for ph, Glucose, Ketones, Protein, Blood and Bilirubin. and microscopic urinalysis sent to the lab. Urine for heavy metals (Arsenic, Mercury, Antimony, Bismuth) for baseline

3. Vision, hearing and pulmonary Testing.

4. Baseline Chest Xray and repeated as medically recommended

5. Resting EKG with Stress EKG's over 35 pre-employment and then as recommended by physician.

6. Cancer Screening: Skin, breast, pap smears, mammograms for females over 40 and PSA for males over 40 and fecal occult blood testing. Colonoscopy if required.

Immunizations

1. Immunization history reviewed, Hepatitis A and B, MMR, Tetanus and diphtheria, polio and tuberculosis initially. Boosters offered as indicated by physician.

2. Any referrals that may be necessary are initiated.

Exposure Report

Incident #:_____ Date:_____

Time:_____ to_____

Address of incident: _____

Incident Type

☐ Structure Fire ☐ Vehicle Fire ☐ Vehicle Accident ☐ Haz Mat

☐ Additional or Other:_____

Primary Activity

☐ Extinguishment ☐ Search/Rescue ☐ Salvage and Overhaul

☐ Ventilation ☐ Support ☐ Medical Care

☐ Haz Mat Response ☐ Vehicle Extrication ☐ Command

☐ Other (explain):_____

Symptoms: ☐ No ☐ Yes (if yes, explain):

_____

_____

Medical Attention Required ☐ No ☐ Yes

Products/Substances/Toxins Exposed too: (List if known)_____

_____

Length of Exposure:_____

PPE Worn at Scene:_____

Chief Signature or Designate:_____

It is important for fire department members to document all their training and emergency responses they have attended while in the fire service. This documentation will help each firefighter in the event they have to submit a claim through WorkplaceNL. By completing this document, it will also help to cover the firefighter in case there is an injury at the emergency scene and an investigation maybe required. By documenting your actions at each scene this could help with any insurance claims, loss of time from your employment.

Fire departments are encouraged to document each of their firefighters training and emergency responses either on a spreadsheet in an excel or word program or a proper Fire department record software program. If using a software program and it is a web-based program, make sure the data is stored on a server in Canada.

Fire departments should have a Standard Operating Procedure or Guideline to ensure members are documenting all their incidents and training when exposed to hazards.

Fire Decontamination

Documentation

Fully document all fire or chemical exposures on incident report form or personal exposure report forms.

Documentation is essential to establish clear correlation between a firefighter's work and his/her health. Record keeping helps to see the extent of exposure that a firefighter experiences in his/her career.

Purpose - all department personnel who operate in and/or around hazardous work areas or potentially hazardous work areas should document their exposure that they were exposed to at an incident. Documenting your personal exposure will be part of your first line of defense.

Scope - all department personnel who operate in and/or around hazardous work areas should fill out exposure report form after every incident and have the Fire Chief or designate sign the form once completed.

Procedure - the following information should be provided on the exposure report form:

- Incident report number
- Date
- Time
- Location of incident
- Incident type
- Activity at the scene
- List any signs or symptoms you experience
- Medical attention required
- Did you seek medical attention after the incident?
- Length of exposure
- List PPE worn at the incident
- List any known products / toxins may have been at the incident

Contamination Control Best Practices

Introduction

One of the principal output areas for this committee was to identify and evaluate the need to support various best practices that can be employed by fire departments and others in the fire service industry for purposes of contamination control. Best practices represent prevailing procedures that have been shown to provide benefits in achieving contamination reduction and control within the fire service as supported by different technologies or operational approaches.

Purpose

To convey the enormity of the problem and to describe the various forms of contamination that affect firefighter health and how these exposures occur and are aggravated with the fire service by controllable and non-controllable circumstances.

Contamination Types

Products of Combustion

Chemicals

Blood and Potentially Infectious Body Fluids

Asbestos

Infectious Bacteria, Viruses, and Spores

Contamination Locations

On Fireground

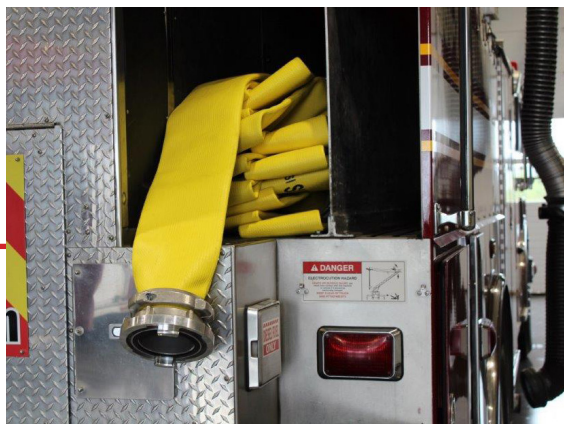
Inside Apparatus

At Fire Station

Contaminated Items

Turnout Gear

Fire Hose



Tools

Examples of Mitigation Methods

On Scene Gross Decontamination

Laundering of Turnout Gear

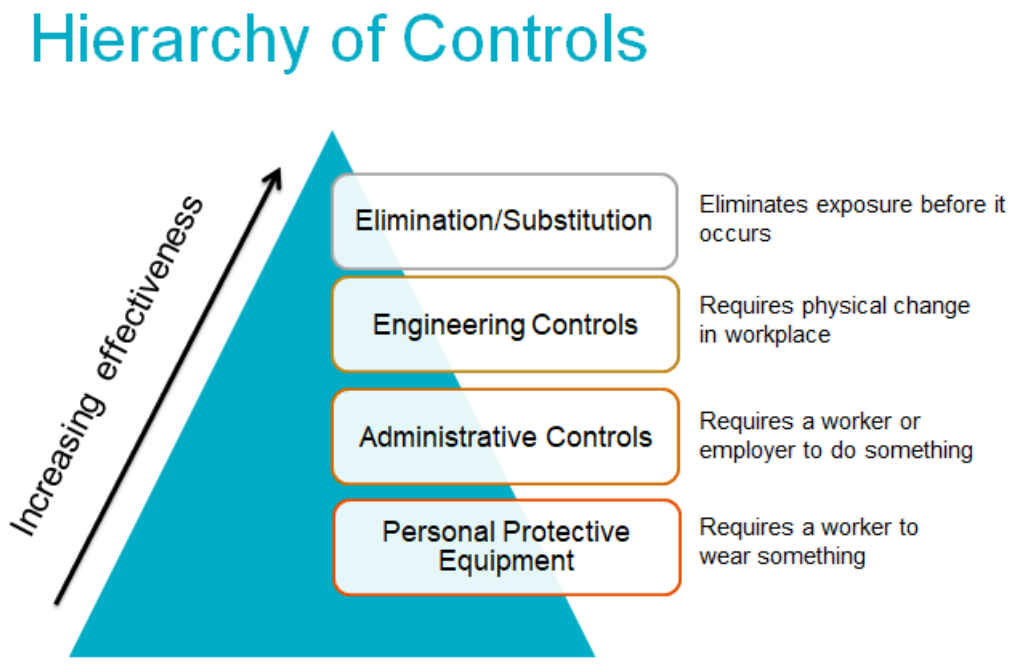
Source Capture of Apparatus Diesel Exhaust

Scope

Based on its review of existing or emerging best practices for contamination control, the committee found that the following areas are specific targets for implementation.

- Contamination avoidance
- Gross decontamination at the emergency scene
- Cleaning and decontamination
- Wellness and health
- Apparatus design and cleaning
- Proper wearing of PPE
- Contaminated item handling
- Personal hygiene
- Documentation and record keeping
- Fire station design and maintenance

It should be noted that research within the fire service is constantly evolving and the Recommended Practices may change. This is a current overview of recommended fire service best practices for contamination control.

CATEGORY	CONTAMINATION AVOIDANCE
Recommended Practices	• Teach personnel how to recognize contamination hazards • Delineate hazard zones at emergency scene • Designate HOT, WARM, and COLD zones • Keep unprotected personnel away from contaminated areas
Supporting Information	Practices have been successfully used in HazMat responses; Practices expected to require minimal investment on part of organization
Relevant Image(s)	

CATEGORY	PROPER WEARING OF PPE
Recommended Practices	• Select appropriate PPE • Conduct thorough hazard assessment • Ensure that selected PPE is properly integrated to provide needed level of protection • Wear PPE according to manufacturer instructions • Continue wearing PPE where hazards still remain
Supporting Information	Practices comply with OSHA regulations for proper selection of PPE; Practices also follow current operational doctrine for HazMat response
Relevant Image(s)	For structural firefighting, it is critically important that all items are properly fitted and are in place during all activity where hazards can be encountered including during overhaul; the head, neck, and upper body are especially vulnerable areas 

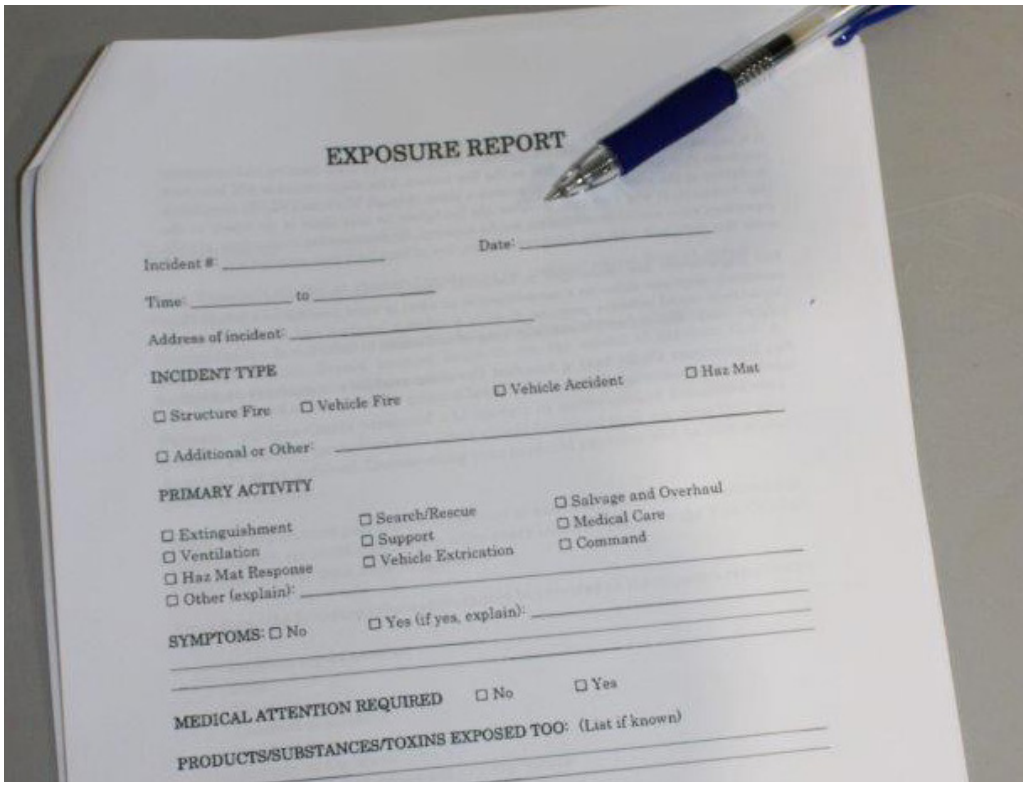
CATEGORY	GROSS DECONTAMINATION AT THE EMERGENCY SCENE
Recommended Practices	Integrate contamination control as part of member rehabilitation procedures • Start cleaning as soon as possible after coming out of the emergency scene • Perform appropriate techniques for gross decontamination (cold weather?) • Maintain protection until principal contamination is removed
Supporting Information	Preliminary work at Illinois Fire Service Institute has shown better removal of some contaminants using on scene wet and dry decontamination
Relevant Image(s)	  Spraying of firefighters at the scene removes exterior soils and contamination to limit later transfer. Wet decontamination can be undertaken with simple supplies using water service from apparatus.

CATEGORY	CONTAMINATED ITEM HANDLING
Recommended Practices	Properly remove PPE to avoid contamination transfer • Isolate and bag contaminated PPE • Provide clean clothing for personnel at scene • Avoid transporting contaminated PPE in apparatus or personal vehicles • Apply proper cleaning to other contaminated items
Supporting Information	Initial work has been performed to show transfer of contaminants to skin if proper doffing not done; Limited research shows evidence of contaminant transfer to vehicles
Relevant Image(s)	Gear should be bagged and isolated after wet decontamination for separate transport out of personal areas of apparatus for later advanced cleaning 

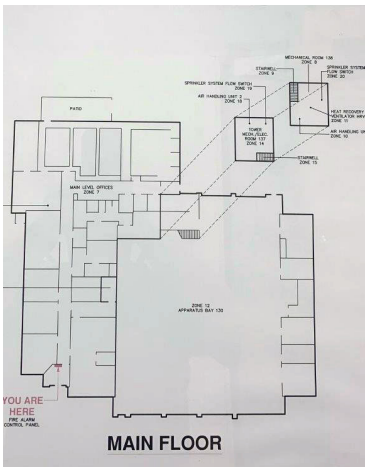
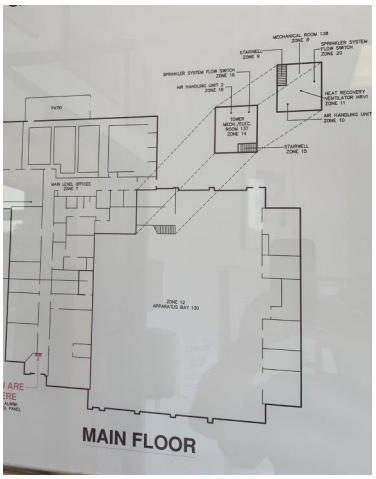
CATEGORY	CLEANING AND DECONTAMINATION
Recommended Practices	When cleaning contaminated equipment, always wear appropriate PPE: gloves, splash gown and N95. If equipment is dry the particles could become airborne. Clean all contaminated items • Other items: SCBA, boots, gloves, hoods, hose, tools should be also be cleaned • Contaminated items should be cleaned as per the manufacturer's recommendations • Ensure that items can be safely returned to service
Supporting Information	Limited research showing removal of contaminants from garments and hoods; No acceptable levels of residual contamination levels established; Review of cleaning for other items is needed especially gloves and footwear.
Relevant Image(s)	Cleaning of turnout clothing in washer/extractor 

CATEGORY	PERSONAL HYGIENE (SHOWER WITHIN THE HOUR)
Recommended Practices	Change out of station wear and undergarments as soon as possible following exposure • Take a shower as soon as possible after exposure Shower with a purpose, using a strong body cleanser and scrub areas where you are more likely to sweat and bend
Supporting Information	No specific studies shown in fire service; however, recommended practices coincide with contamination control in industry and healthcare; No specific data related to shower temperature
Relevant Image(s)	Did You Wash Them? Practice frequent handwashing 

CATEGORY	WELLNESS AND HEALTH
Recommended Practices	Get baseline physicals with appropriate benchmarking / diagnostic tests • Have follow-up annual physicals or as needed • Eat healthy, hydrate frequently, maintain level of fitness • Undertake good lifestyle habits
Supporting Information	Multiple studies outside fire service and limited studies within fire service showing benefits of wellness programs to overall health
Relevant Image(s)	Health care providers 

CATEGORY	DOCUMENTATION AND RECORD KEEPING
Recommended Practices	Document all exposures with sufficient detail • Provide monitoring where possible • Retain information and link to exposures • Maintain records for all personnel • Apply in medical exams
Supporting Information	Provisions already exist for detailed documentation of fire service exposures Specific standards in place for routine firefighter medical examination
Relevant Image(s)	Document 

CATEGORY	APPARATUS DESIGN AND CLEANING
Recommended Practices	Arrange apparatus with storage compartments for contaminated items. Alternatively, use separate transport where possible • Apply appropriate cleaning and disinfection to apparatus following use in a contamination event
Supporting Information	Practices now applied for emergency medical services but not fire apparatus
Relevant Image(s)	

CATEGORY	FIRE STATION DESIGN AND MAINTENANCE
Recommended Practices	Control exposures at fire station: • Apply segregation of clean versus contaminated areas. • Use transition zones. Ensure separate areas for cleaning contaminated items • Provide for proper storage of PPE and other contaminated items • Practice appropriate station hygiene procedures • Use diesel capture system
Supporting Information	Limited requirements for fire stations other than infection control (NFPA 1981). Diesel exhaust systems used but no standard or criteria exist for judging effectiveness.
Relevant Image(s)	  

Conclusion

Ultimately, best practices should be promoted to the fire service for addressing immediate concerns related to contamination control. As best practices are further defined, they can become part of existing voluntary standards to be used by the fire service. To properly address the specific key element within a contamination control campaign, it is necessary to create the awareness and tools for the fire service adoption of specific procedures, which can limit exposure to contamination.

Contamination control is not a new concept for worker protection; however, in relation to certain types of contaminants, particularly products of combustion, serious changes are needed for fire and emergency services to overcome years of neglect. To aggressively reverse disturbing trends in the rise of cancer and other chronic diseases that are now being associated with exposure to persistent contaminants, these Best Practices are truly an effort that is needed to ensure that these changes continue well into the future.

Cleaning and decontamination of PPE:

It is realized that the cost associated with setting up and implementing wet or dry gross decontamination in the field is minimal and is easily achievable by any fire department. However, to properly clean turnout clothing requires a washer/extractor. This piece of equipment may not be within the budget for some departments. A possible solution is for fire departments to share the cost of a regional unit, similar to what many are doing with air compressors for filling SCBA cylinders.

It is the recommendation of our committee to follow the Guidelines and Best Practices outlined in the following:

NFPA 1851, Standard on Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

NFPA 1500, Standard on Fire Department Occupational Safety, Health and Wellness Program

NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

The garments manufacturer’s instructions.

SOP / SOG:

It is not possible to develop a SOP / SOG for every category listed above that will fit the operation for every fire department. It is suggested that you use the Supporting Information from each category to develop your own. That being said, the gross decontamination SOP / SOG is very close to being universal for any department. Refer to the sample below.

Decontamination on the Fire Scene

A. Purpose

This SOP will provide a procedure that will remove the harmful chemicals and carcinogens that are accumulated through fire extinguishment and overhaul through on scene gross decontamination.

B. Responsibility

It should be the responsibility of the Incident Command and/or the Safety Officer to ensure that any necessary decontamination of firefighters and equipment be completed before returning to the fire station.

It should be the responsibility of the driver/operator of the pumper to establish the decontamination line as soon as possible.

It should be the responsibility of the individual firefighters to ensure that they are decontaminated prior to removing facepieces, exchanging air bottles, or returning to the fire station.

C. Equipment Needed


5-gallon bucket


Baby wipes


Garden hose to 2 ½" adapter


Garden hose


Nozzle or wand


Mild detergent


Heavy duty brush


Heavy duty large trash bags

D. Procedures

Individuals performing the decontamination should wear at the minimum: eye protection, an N-95 respirator, and latex gloves.

The decontamination hose line will be charged to pump pressure only. Firefighters should take advantage of this decontamination line prior to exchanging their air cylinders. The hose line will also be used for post incident decontamination.

If practical crews should perform these gross decontamination procedures on each other while they are still on air. Staying on air will prevent firefighters from getting contaminants splashed into their face and also protect them from inhaling airborne contaminants that are off gassing from their PPE.

Wet Decontamination Procedures

1. Add mild detergent to the brush.
2. Brush and wash off your gloves.
3. Close all pockets and flaps.
4. Slowly, without tipping it, remove and wash your helmet.
5. Clutch collar to minimize water entering through the neck opening.
6. With your hood in place, wash off your hood, facepiece, and regulator.
7. Wash your SCBA tank and connections.
8. While removing your facepiece be careful to keep it from any contaminated areas on your gear.
9. Wipe your face and hands off with baby wipes or similar product. Pay particular attention to the neck and jaw area.

Dry Decontamination Procedures

During cold inclement weather, the process of soaking firefighters while performing a wet decontamination may create additional safety hazards such as hypothermia, and equipment failure.

1. Brush off all large particles from the PPE, working from the head down.
2. Use damp towels to wipe the area around the firefighter's facepiece to suspend any particulate matter.
3. Attempt to remove all of the visible contaminants.

Post Activity Decontamination on Scene

1. Individuals should wear eye protection, minimal N-95 respirator, and latex gloves.
2. All equipment and hose will be hosed down thoroughly prior to being placed on the apparatus.
3. PPE should be doffed, sprayed, brushed with mild detergent, and rinsed off.
4. All PPE should be placed in a trash bag in order to reduce contamination of the interior of the apparatus.
5. Wipe your face and hands off with baby wipes.

Additional Material

The information below is from the HEALTHY IN HEALTHY OUT document.

Hand Washing

After gross decontamination and before eating or drinking, a personal hand washing station, including hand soap and towels, will be set up. In lieu of soap and water, utilize disposable wipes for hands, face and neck. Personnel should wash their hands before Rehab, at the end of suppression activities including overhaul and before returning to the living quarters. The hand wash station or wipes should be available at the entry point to rehab.

Hoods

All firefighters engaged in suppression activities, overhaul or exposure to smoke should exchange their contaminated hood for a clean one every time they exit the Immediate Danger to Life and Health. Replacement hoods should be readily available on scene.

Equipment Cleaning

SCBA facemasks and tools are exposed to the same products of combustion as turnout gear. They are contaminated any time they are exposed to a smoky atmosphere, including, but not limited, to structure fires, car fires, dumpster fires, training fires or burnt food on the stove. If not properly cleaned, contaminated equipment will continue to expose personnel to carcinogens long after the fire.
Gross decontamination of equipment should be done at the scene.
Any time contact is made with the contaminated equipment at the scene or while cleaning, proper PPE that will limit dermal absorption should be used.
Transportation of contaminated SCBAs, masks and other equipment:

Contaminated equipment should be grossly decontaminated first, then encapsulated if transporting in the fire engine to further reduce exposure or contamination to uncontaminated areas.

Contaminated equipment does not need to be encapsulated if it can be transported to the cleaning facility in a vehicle (e.g., pickup) that will not allow further cross-contamination of the apparatus cab, compartments or exposure to personnel. Equipment should be cleaned in a location that will allow for proper cleaning without further exposure to personnel or living quarters.

After each use, all equipment will be cleaned according to manufacturer's recommendations.

For most hand tools (axe, hooligan, shovel, etc.), use mild soap and water. If necessary, scrub with a soft to medium bristled brush to remove stubborn contaminants.

Using a garden hose, completely rinse the soap from the tools.

Gas powered equipment can be wiped free of smoke, soot and debris.

Cleaning Gloves

- Wear appropriate PPE, EMS Nitrile or latex gloves for dermal protection
- Fill a decontamination sink with approximately two inches of warm water and detergent of choice
- Grab gloves by gauntlet, pinching off end or wear one glove at a time
- Using a medium bristled brush, submerge the glove and scrub the exterior of the glove; working from gauntlet toward tip. Turn glove over and repeat on other side. Continue until glove is clean then rinse under running water. Perform same procedure on other glove
- Empty sink and fill with clean water and approved sanitizer to clean the inside of the glove
- Do not wring as the lining may become dislodged from the shell
- Hang upside down to dry

Personal Vehicle

- Contaminated turnouts should never be transported at any time in a personal vehicle. Use a fire department vehicle to transport contaminated turnouts to a designated facility for cleaning. By transporting contaminated turnouts in a personal vehicle, a member can subject their family and/or household to potential cross-contamination from the fireground.
- Clean turnout gear may be transported in a personal vehicle in an enclosed container or encapsulated in a designated bag to avoid cross-contamination to personal belongings.

Apparatus Decontamination, Cleaning and Disinfecting

- Proper apparatus decontamination, cleaning and disinfecting are vital in limiting firefighter exposure to contaminants.
- All apparatus cabs, compartments and equipment should be cleaned weekly and decontaminated after every incident or training that involved contaminants.
- Parking upwind, keeping windows closed and heaters and air conditioners off during fireground operations will minimize airborne contaminants from entering the cab.
- All cleaning can be done utilizing cleaning solutions, designated rags, mop buckets, brushes and disinfectants. HEPA vacuums are useful tools to pick up soot and other loose debris prior to cleaning with wet agents.

Apparatus Cab

- Apparatus cab cleaning should utilize a top-down cleaning method followed by disinfecting.
- Special attention should be paid to computers, radios, map books, seats, steering wheel, floorboards and headsets.
- Disinfecting is intended to prevent the spread of contagious illnesses such as C Diff, MRSA, staph, etc.
- All cloth surfaces should be cleaned using a vacuum and/or steam extractor.
- Remove all equipment and use the top-down method to clean apparatus compartments.
- All equipment should be cleaned prior to being placed back on the apparatus.
- After cleaning is complete, utilize the department's cleaning program for the rags and mops.
- Wash hands, face and neck or shower.

Sample SOP Post Fire Decontamination

SOP FOR POST FIRE DECONTAMINATION:

All department personnel who will operate in and/or around hazardous work areas or potentially hazardous work areas.

1. PURPOSE

To establish guidelines and procedures in an effort to combat the incidence of cancer among our members, giving consideration to recommendations contained current studies and reports, the (your fire department name) Fire Department has identified specific actions that will be required moving forward. Most of these actions are common sense issues that should be done routinely. Others require that we re-think how things have been done in the past.

2. USE

The focus of this document is the health and well-being of each member of our fire department. Please remember to consider your health, the health of your co-workers, and the impact that cancer can have on your family.

3. PROCEDURES

Description

Proper use of personal protective equipment for structural firefighting is essential to the health and safety of all firefighters.

The (your fire department name) Fire Department shall provide each member with the appropriate personal protective equipment (PPE) to provide protection from the hazards of the expected work area to which the member is or may be exposed.

Scope

All department personnel who will operate in and/or around hazardous work areas or potentially hazardous work areas will utilize this procedure.

Hazardous Work Areas

For the purpose of this procedure the hazardous work areas are defined as follows;

- Structure fires- the hazard area will be 1.5 times the height of the structure.
- Wildland fires – the hazard area will be 200 feet from the fire.
- Vehicle fires – the hazard area will be 50 feet around the vehicle on fire.
- Vehicle Accidents – the hazard area will be 50 feet around the vehicles involved.
- Hazardous Material Incident – the hazard zone will be determined by the incident commander and the Emergency Response Guidebook.
- Technical Rescue – the hazard zone and personal protective equipment needed will be determined by the incident commander.
- Water / Ice Rescue - the hazard zone and personal protective equipment needed will be determined by the incident commander.

General Procedures

The (your fire department name) Fire Department will implement a procedure for decontamination of structural firefighting personal protective for the protection of our members.

Members should be fully trained in the care, use, inspection, maintenance and limitations of the PPE assigned to them or available for their use.

PPE should be used and maintained in accordance with the manufacturer's instructions.

Members should be responsible for the routine inspection and maintenance of issued clothing and equipment.

Members should wash issued protective clothing after each incident if the protective clothing becomes dirty or contaminated. At a minimum all gear needs to be washed at least once every six months.

Any equipment, personal protective clothing or otherwise, that has come into contact or has been exposed to contaminants at an incident, during training or during any other situation experienced by personnel in the course of their duties shall be mitigated, contained, and decontaminated.

Cleaning should be initiated at the emergency scene. Where practical to do so any dry debris shall be brushed off. Soiled gear shall be washed off with a charged hose line on low pressure fog. Boots shall be washed off with a charged hose line on low pressure fog paying particular attention to the soles.

Firefighters when exiting a building should remain on air for at least two minutes in order for their gear to off gas in the fresh air.

Clear bags should be placed on apparatus for PPE to be brought back to station for cleaning.

Personnel should be cognoscente of the level of contamination on PPE before entering rehabilitation. Prior to proceeding to Rehab personnel will remove their SCBA and contaminated PPE. Should the need arise personnel in rehab will don an N95 particulate mask and Nitrile gloves. Hands and face should be washed with a sanitary wipe prior to entering rehab for rest, rehydration and nourishment.

Firefighters will be required to bag their gear if they have come into contact with blood or body fluids (on scene).

When applicable don an: N95 and Nitrile gloves at the applicable time during doffing of contaminated PPE.

SCBA's should be bagged before placed back on apparatus before returning to station for cleaning.

Equipment that has been contaminated should be cleaned on scene if weather permits or back at station.

Station work areas or areas for cleaning and decontamination should be thoroughly cleaned after returning from each incident.

Personal clothing worn under bunker gear that has been exposed to products of combustion or other contaminates, shall be changed as soon as possible.

All turnout gear should be washed and then hung to air dry before it returns to service.

Sanitary wipes will be placed on apparatus for cleaning off face/ neck/ hands etc.

It is the responsibility of all personnel to initiate decontamination procedures when they or their officers have determined that contamination has occurred. Additionally, following the on-scene cleaning, firefighters should isolate and contain their contaminated gear. Current guidelines require firefighters to bag their gear if they have come into contact with blood or body fluids. This tactic is now being suggested for everyday cleaning procedures to reduce contaminating vehicles and other common areas following an incident. This helps contain harmful substances, as well as reduce the risk of contaminants absorbing into the firefighter's skin because he or she will promptly remove and bag the gear on the scene to isolate and contain it.

Cleaning processes for these items include:

- Hoods: Hoods should be washed with the lining of the PPE.
- Helmets: Helmets should be disassembled for cleaning. The helmet earflaps can be washed in a cycle with the outer shells. The helmet shell should be hand washed with a rag and mild detergent.
- Gloves: Gloves should be pre-treated and hand washed. When washing, gloves should be filled with a mild detergent.
- Boots: Boots should be pre-treated and hand washed. You can use a brush and mild detergent to gently scrub the boots. The boots should then be rinsed and hung upside down for drying.

In addition to laundering PPE, there are steps all firefighters should take following a fire or incident that will help prevent and reduce health risks:

- Use a wet towel to remove as much soot as possible (sanitary wipes)
- Change clothes and wash them immediately
- Thoroughly shower after a fire
- Avoid storing gear in the car, your home or living quarters before it is cleaned
- Attend an annual physical examination with a doctor and encourage others to do the same

Responsibility

It should be the responsibility of the Incident Command and/or the Officer/Firefighter in Charge to ensure that any necessary decontamination of firefighters and equipment be completed before returning to the station.

It should be the responsibility of the driver/operator of the pumper to establish the decontamination line ASAP.

It should be the responsibility of the individual firefighters to ensure that they are decontaminated prior to removing facepieces, exchanging air bottles, or prior to returning to the station.

Equipment Needed

- Water Supply
- Wet-Nap or Baby wipes
- Garden hose
- Heavy duty large clear bags
- N95 Masks
- Mild liquid detergent (when mix with water pH range of not less than 6.0 pH and not greater than 10.5 pH)
- 5-gallon bucket
- Garden hose to 2 ½" adapter
- Nozzle or wand
- Soft brushes
- Nitrile Gloves

Procedures

Individuals performing the decontamination should wear at the minimum eye protection, a N-95 respirator, and Nitrile gloves.

If practical crews should perform these gross decontamination procedures on each other while, they are still on air. Staying on air will prevent firefighters from getting contaminants splashed into their face and protect them from inhaling airborne contaminants that are off gassing from their PPE.

Wet Decontamination Procedures

1. Assemble firefighters with contaminated PPE in an area free of traffic or other hazards
2. Add the detergent solution to the brush.
3. Brush and wash off your gloves.
4. Ensure to close all pockets and flaps.
5. Slowly, without tipping it, remove and wash your helmet.
6. Clutch collar to minimize water entering through the neck opening.
7. With your hood in place, wash off your hood, facepiece, and regulator.
8. Wash your SCBA tank and connections.
9. While removing your facepiece be careful to keep it from any contaminated areas on your gear.
10. Remove the solution with a fresh water rinse
11. After firefighters have been washed and rinsed from head to toe, doff the PPE.
12. Follow up with using baby wipes around the head and neck area, paying attention to the amount of contaminates that have accumulated on the wipes.
13. After cleaning from the decontamination line, the PPE should be thoroughly cleaned according to the manufacturer's instructions or the referenced NFPA standard and dried.
14. Firefighters shall shower and don clean uniforms/clothes.

Dry Decontamination Procedures

During cold inclement weather the process of soaking firefighters while performing a wet decontamination may create additional safety hazards such as hypothermia, and equipment failure.

1. Dry brushing should be conducted to remove the toxic products of combustions from the firefighters prior to going off air and removing SCBA face pieces. Attempt to remove all of the visible contaminants.
2. Brush off all large particles from the PPE, working from the head down.
3. Use damp towels to wipe the area around the facepiece to suspend any particulate matter.

4. Place contaminated PPE in large encapsulating leak-proof bags for transport back so it may be thoroughly cleaned according to manufacturer's instructions or the referenced NFPA standard and dried. Wear a minimum of EMS latex or Nitrile gloves to protect hands from dermal absorption of contaminants while packaging PPE.
5. Follow up with using baby wipes around the head and neck area, paying attention to the amount of contaminates that have accumulated on the wipes.
6. Firefighters shall shower and don clean uniforms/clothes.

Post Activity Decontamination On Scene

1. Individuals should wear eye protection, minimal N-95 respirator, and Nitrile gloves.
2. All equipment and hose will be hosed down thoroughly prior to being placed on the apparatus.
3. PPE shall be doffed, sprayed, brushed with mild detergent, and rinsed off.
4. All PPE should be placed in a clear bag in order to reduce contamination of the interior of the apparatus.
5. Wipe face and hands off with baby wipes.

The decontamination hose line will be charged to pump pressure only. Firefighters should take advantage of this decontamination line prior to exchanging their air cylinders. The hose line will also be used for post-incident decontamination.

Note: This plan will be reviewed annually to reflect changes in procedures, policies or work rules. This SOP may be revised as necessary to ensure the highest level of cancer prevention.

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FIREFIGHTER CANCER DON'T BE NEXT

9% of Firefighters have a higher risk of being diagnosed with cancer

14% have a higher risk of dying from cancer than the general population (NIOSH 2015)

FIREFIGHTER CANCER
DON'T BE NEXT

C HANGE YOUR PPE AFTER EVERY FIRE

A LWAYS TAKE A SHOWER AFTER EVERY FIRE

N EVER PLACE DIRTY PPE IN LIVING AREAS, INCLUDING YOUR CAR

C LEAN YOUR PPE REGULARLY REGARDLESS OF APPEARANCE

E XERCISE CAUTION AROUND EXHAUST

R EMEMBER TO GET YEARLY MEDICALS

FIREFIGHTER CANCER
DON'T BE NEXT

Soot is not a badge of honour

Soot contains hundreds of chemicals, many of which can cause cancer. Clean your PPE after a fire.

CRIME DO NOT CROSS

WorkplaceNL

Newfoundland Labrador